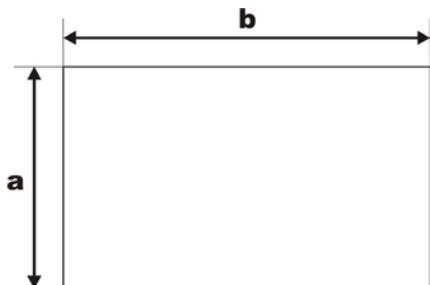


# MATRIX

## How to install inductive loops?



Loops are mostly installed in a quadratic or rectangular form. According to the loop size, the loop wire has to be turned a different number of times in the slot.

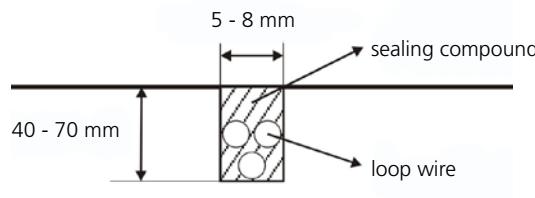
The table below shows the requested number of turns in a loop according to the loop size (side ratio 3:1 = b:a).

Circumference	Number of turns	Inductivity
4 - 5 m	5	180 - 200 $\mu\text{H}$
5 - 6 m	4	130 - 160 $\mu\text{H}$
6 - 15 m	3	140 - 150 $\mu\text{H}$

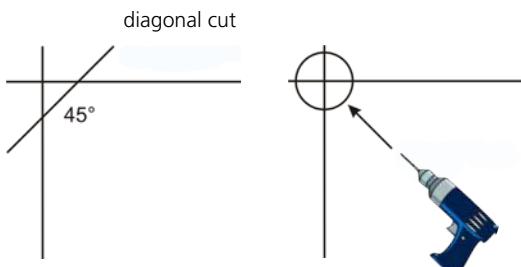
## INSTALLATION

To put the loop into the ground, a slot has to be cut into the concrete or asphalt. This slot should be approx. 40 mm – 70 mm deep and 5 mm – 8 mm wide.

The loop wire can be a standard flexible and isolated copper line HO7V-K1.5 (NYAF 1.5  $\text{mm}^2$ ). A bigger cross-sectional area of the cable will improve the sensing capability. For long distances, a foiled twisted pair cable (FTP) is recommended.



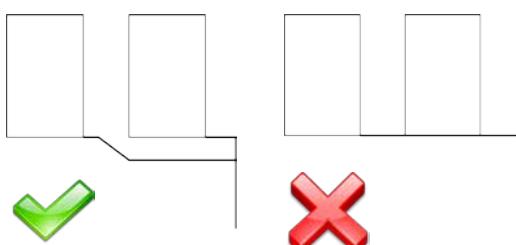
- If the loop slot is sealed with hot bitumen, use a temperature-resistant loop wire!
- The ground covering has to be continuously solid and without cracks.
- The loop wire must not show any isolation damage.
- The loop wire must not jut out of the slot or isolation will be damaged.
- The slot has to be clean and dry before sealing. Avoid humidity!
- The loop wires must not move after sealing the slot.
- Pay attention to the edges when installing a loop.



## EDGES

In applications with doors, gates or barriers, a 45° diagonal cut should be made to the edges in order to avoid strain on the loop cable.

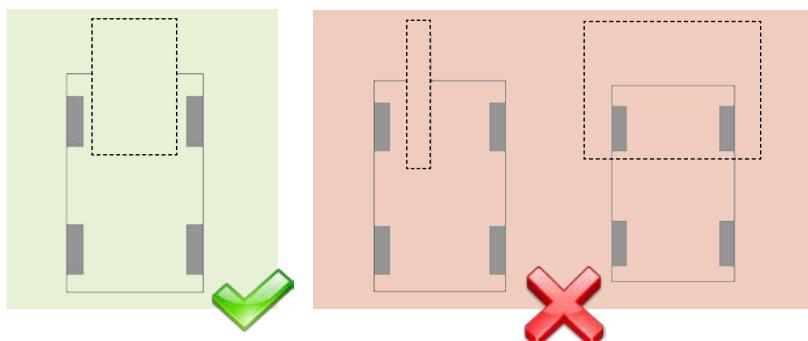
In applications on highways, a hole should be drilled on the edges to round these off and relieve strain from passing vehicles.



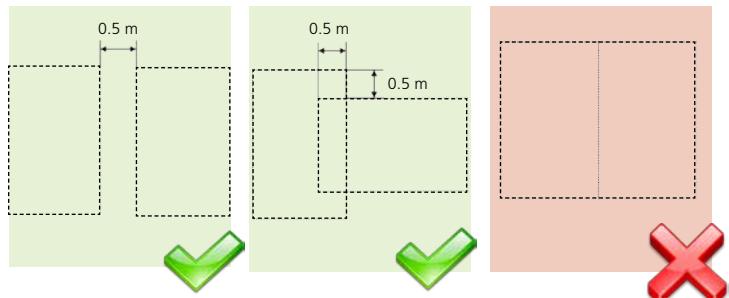
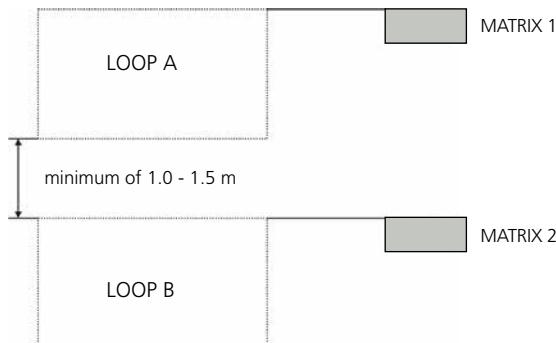
## FEEDER CABLE

- Both feeder cables have to be twisted, +/- 15 turns per meter (NYAF).
- Please keep a distance of min. 10 cm to all other electrical wires.
- Keep a distance between feeder cables of different induction loops.
- Do not cross the feeder cable with other loops.

## LOOP GEOMETRY



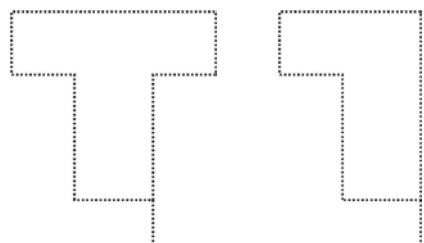
The loop geometry has to be adjusted to the corresponding application. The loop should be a little bit smaller than the vehicles to detect in order to achieve the highest sensitivity.



Loops of different Matrix sensors have to be installed with a space of 1 m to 1.5 m between each other (depending on the loop size).

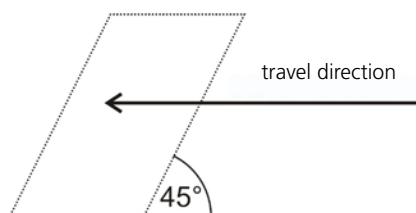
If the dual channel Matrix is used, the loops can be installed nearer (0.5 m) to each other or even in interlocking positions. As the channels are multiplexed, no interference will occur.

## SPECIAL FORMS



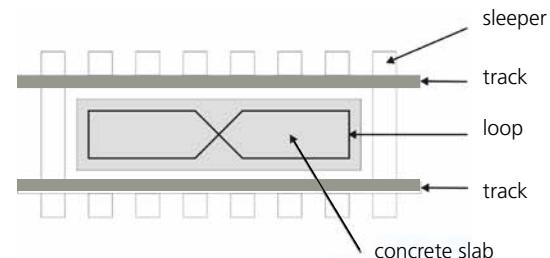
- Never install a loop in a too narrow or small way, because this will increase detection.
- Please take this into account when using loops in applications with vehicles that have a high clearance.
- To avoid a fade-out area between axles of lorries and trailers, the loop should have a corresponding length.

## TWO-WHEELED VEHICLES



Because two-wheeled vehicles cause minor detection, the loop should be installed in an angle of 45° to the travel direction.

## RAILWAY APPLICATIONS



For railway applications, the induction loop has to be positioned between the tracks. Minimum distance between loop and track: 20 cm! The loop is installed in the form of an 8 to compensate interferences between voltages of the current and the loop circuit. Avoid vibrations!

## TIPS!

- Make sure the slot is sealed well to avoid water infiltrations that cause faulty detection and movement of the loop.
- Twist feeder cable at least 15 times per meter.
- Avoid loops longer than 100 m to maintain sensitivity.
- Fix the feeder cable firmly to avoid false detections.
- Leave enough space between the loop, the feeder cable and other electrical wires (including heating lines!).
- Check the function of the loop after installation.